combination. Such facts as these, if well established, render necessary *some form* of dissociation hypothesis.

A Grotthus chain of quite *equidistant* atoms might serve, instead of actual dissociation, or a momentary dissociation would be sufficient; but no hypothesis which involves a tearing asunder of molecules in the *interior* of a homogeneous electrolyte can be permitted.

Herein lies the great distinction between electrolytes and dielectrics.

Hypotheses (1) and (2) may be held in either of two forms:

(*a*) The electrical influence of the electrodes may be supposed to reach every molecule of the fluid. This was Grotthus's form of (1), and is Quincke's form of (2).

(*b*) The electrical influence of each electrode may only extend within molecular distance of its surface, while the adjustments occurring in the main body of the fluid are effected by ordinary diffusion. This was probably Faraday's form of (1) and it is Maxwell's form of (2).

Helmholtz's hypothesis (3) emphasises the (*b*) aspect of the matter by appealing to electrostatic interactions of the atoms to maintain uniformity of composition. And within a range of 10^{-8} centimetres of each electrode there is supposed to exist an ordinary electrostatic strain, like that in an ordinary dielectric condenser plate.

The great magnitude of the atomic charges explains the feebleness of the difference of potential required to effect decomposition on electrostatic principles. And the same thing suggests a mainly electrical theory of chemical affinity.

To separate an atom from its charge requires expenditure of work, hence Helmholtz's theory of a specific attraction between matter and electricity, which he uses to explain Volta's "contact-force," the charge of atoms in a molecule, frictional electricity, and many other phenomena.

VI. *Addenda.*

Calculation of EMF needed to effect decomposition—
(*a*) of a dielectric,
(*b*) of an electrolyte,
on electrostatic principles.

Suggested theory of disruptive discharge.

Possible distinction between chemical compounds and molecular aggregates.

Discussion of various phenomena from the point of view of a possible "atomic" theory of electricity.

NOTES

SINCE our last issue Dr. Harting, of the Dorpat Observatory, has announced an apparent variation in the great nebula of Andromeda, which has caused some excitement in the astronomical world. As represented in all our drawings, and, still better, in a photograph which Mr. Common was fortunate enough to obtain last year, the centre of the nebula appeared to be only moderately condensed. There was no star or stellar point. Now, on the contrary, there is a most unmistakable star of the eighth or ninth magnitude. The question is, is this a *stella nova* in the line of sight of the nebula, or has the phenomenon been produced by a new condensation in the centre of the nebula itself? Opinion inclines to the latter view, as, according to some accounts, other accompanying changes have been seen with large instruments, &c. But, on the other hand, spectroscopic evidence that the apparent nebula is not a very distant cluster is absent. By our next issue we may hope for a large harvest of telescopic and spectroscopic observations of this new object.

THE International Congress of Schoolmasters was opened in the Grand Theatre at Havre on the afternoon of the 6th instant, Mr. Goblet, the Minister of Public Instruction, presiding.

THE Severn tunnel has now been completed, and on Saturday last a train containing officials and their friends passed through it from end to end.

A CASE of Asiatic cholera has occurred at Cardiff. A labourer, loading a vessel which had recently arrived from Barcelona, drank water which had been put into a cask at that port, and which was described by the medical inspector as totally unfit to drink, having the appearance of discoloured milk, and being putrid. The man died in a few hours of Asiatic cholera.

ON August 25 and subsequent days was held in Turin the International Congress of Alpine Clubs. The principal topic of discussion was the better management of refuges erected in different parts of the Alps, new regulations for guides, and pensions to be granted to them. The honorary president was the King of Italy, His Majesty being represented by M. Loyi; the acting president was Prof. Ferrati. The readings of minimum and maximum thermometers were also collected and discussed. Several excursions took place at the close of the session.

THE German Meteorological Society met for its third congress at Munich last month. Prof. Bezold, of Munich, who delivered the address of the meeting, took for his subject "The Advances of Meteorology during the last Ten Years," dwelling mainly on the alterations made by the introduction of the synoptical method in connection with telegraphy.

THE eleventh *Bulletin* of the United States Geological Survey is a paper on the quaternary and recent mollusca of the Great Basin, with descriptions of new forms, by Mr. R. Ellsworth Call, with an introduction containing a sketch of the quaternary lakes of the Great Basin, by Mr. G. K. Gilbert.

REPEATED severe shocks of earthquake have occurred in the south-east of Lower Austria and in the north of Styria, and have been followed by further shocks in Bonia, described as moving from east to west.

WE have received Prof. Holden's account of the progress of astronomy in 1884, and Prof. Rockwood's account of vulcanology and seismology for the years 1883 and 1884, reprinted from the Smithsonian Report for 1884; also Mr. Albert Williams's report on placer mines, and mining districts, from the report of the tenth census of the United States on the statistics and technology of the precious metals.

THE programme of the technological examinations of the City and Guilds of London Institute for the Advancement of Technical Education for the session 1885–86 has been published. It contains a detailed syllabus of the examinations for the different grades on each subject, and copies of recent examination papers. It is to be obtained at the offices at Gresham College, and at Exhibition Road.

MR. G. J. SYMONS, who has examined the trees recently damaged by lightning in Richmond Park, has communicated the results of his observations to the *Times*. They are two of a group of oaks in the eastern part of the park, slightly south-west of, but very near, the White Lodge. They were fine trees, their girth at 3 feet being 11 and 12 feet respectively; the trunks are 23 feet apart, and one is nearly due north of the other. There are three other trees quite close to them (within 40 feet), which are uninjured, except by the branches which were thrown upon them. The injury to one tree, though fatal to it, is unimportant, but the other tree affords a tremendous instance of disruptive power. It appears to have been cut through horizontally at about 3 feet above the ground; the upper portion shows comparatively little injury, but the lower part is not merely stripped of its bark, but burst open in a very intense way; spikes of the stem, several inches thick and 10 to 15 feet long, stand out from the trunk somewhat like the ribs of an umbrella before it is fully opened, and grip between themselves and the centre of the trunk branches which fell from the upper part before they had time to reclose, while the ground for perhaps 200 feet around is strewn with the bark and fragments of the trunk, from scraps like lucifer-matches to pieces which some men could not lift. From this state of facts Mr. Symons suggests some problems: Why one tree rather than another should be struck if it be not the tallest? why, as in this case, the wreck of one tree is greater than that of the other 23 feet away? what produces this disruptive force? &c. A curious question is, Why oaks and elms are especially liable to be struck? It was stated in 1787 that the elm, chestnut, oak, and pine were the trees most often struck in America; in 1860 Mr. Symons himself stated, in a paper read to the British Association, that the elm, oak, ash, and poplar were the most frequently struck in this country. The last number of *Das Wetter* of Magdeburg contains an abstract of ten years' records of trees injured; 265 are reported, and of these 165 were oaks; the only other trees of which the number was more than trifling were: Scotch firs, 34; pines, 22; and beeches, 20. It has been suggested that the frequency with which oaks are struck is due to the presence of iron in the wood.

It is strange to contrast the weather which we have had during the summer in England, and indeed in Western Europe, with that prevailing in China, Japan, and the rest of Eastern Asia. While here it has been exceedingly dry, with as a rule a hot sun during the day, in Japan it rained almost without intermission throughout June and July, and the sun was rarely seen. It has been in fact a season of unusually heavy rainfall; while with us the reverse has been the case. When the latest mails left, landslips and inundations were of daily occurrence. Between Yokohama and Tokio the railway line was blocked in several places by masses of earth which had fallen, a great part of the country was under water; and the same reports come from Osaka in the south of the main island. Here the water invaded the line, washing away the ballast, and rendering passage impossible; the inundations had rendered many people homeless, and great distress prevailed in many places. The same story comes from China. In the south, in the Kwangtung province, the rivers which debouche at Canton had become swollen with the constant rains, overflowed their banks, and spread desolation far and wide. Whether there is any connection between the extreme dryness here and the extraordinary rains in the far East, and whether either, as has been suggested, has any connection with the unusual seismic activity prevailing at present, must be left to meteorologists to determine; but as this activity, whether, as volcanic eruptions or as earthquakes, appears impartially distributed all over the globe, from Hungary to South America, from the Eastern Archipelago and Japan to Cashmere, it is not easy *primâ facie* to see how it could be the cause of, or have any connection with, such strikingly different phenomena in different parts of the Old World.

The *Auk* (vol. ii. Nos. 2, 3), published at Boston for the American Ornithologists' Union by Messrs. Estes and Lauriat, continues to furnish evidence of the great activity with which ornithology is prosecuted in North America, though the students of that branch of science still affect rather the particular than the general, much as did most British ornithologists some thirty years ago, and as many do now. This perhaps is only to be expected, and since the avifauna of North America is so enormously larger than that of the British Islands, the condition may very likely last longer there than here. Nearly every paper in these two numbers (for April and July of the present year)—reviews of books apart—refers only to the birds of the Nearctic Region or Sub-region; but most of them seem to the eye of a European to be good of their kind. It looks as if the nomenclatural paroxysm, which lately afflicted our esteemed brethren in the United States, were gradually passing away, and we trust that they will then have time to apply their energies to more important subjects. Dr. Stejneger, however, has a fifth series of his "Analecta Ornithologica." His views are in the main so entirely in accordance with what has generally been held in England to be orthodox, that we cannot object to his labours, whatever be the trouble they may cause; and we greatly regret the rare occasions in which we think him mistaken. One of them is in his present paper (pp. 183, 184), where he strives, and we consider fails, to make out that the generally accepted name of *Scops* for a genus of Owls ought to be dropped. Because Brünnich in 1762 turned Brisson's *Scopus* into *Scops*, the latter term was obviously not thereby established; and the former being, as Brisson tells us (*Ornithologie*, v. p. 503), his own coinage from the Greek σκιά (*umbra*) properly a shadow, but taken by him to mean also the colour umber—a signification it seems never to have possessed—it is a wholly different thing from the classical σκώψ, which has always meant an Owl of some sort. Thus the two words are absolutely distinct, and Brünnich can be only regarded as having made a misdirected attempt at grammatical emendation. We therefore hold that even the ornithologists of America, who recognise Brünnich's generic names (which the ornithologists of Europe in general do not), will be fully justified in retaining the name *Scops* in the sense in which Savigny used it. Dr. Merriam has a notice (p. 312) headed "The eggs of the Knot (*Tringa canutus*) found at last!" but we must beg leave to remind him that sixty-five years ago this bird was found to breed abundantly on the Parry Islands, and, though admittedly no eggs are now forthcoming in collections, it has always been understood that specimens were then brought thence. It does not now appear that Lieut. Greely brought home any, though we trust he may have done so; but if he did not we are much in the same position as before in regard to that oological *desideratissimum*. Mr. Ernest E. T. Seton has a letter (p. 316), admirable for its common sense, on "The popular names of Birds," which in a new country, inhabited by English-speaking men and women, is by no means a matter to be neglected. We have to congratulate Mr. Allen on his promotion to the Curatorship of the Central Park Museum in New York City, and Mr. Brewster on succeeding to the appointment at Harvard University thereby vacated. Both these gentlemen are so well known by name to English ornithologists, that it is quite unnecessary to point out their eminent qualifications for the posts they now respectively hold, and we hope will long continue to enjoy. The name of Dr. Coues does not appear as a contributor in either of these numbers, which fact is, we suppose, attributable to his departure westward, where we trust he will continue those field-observations for which he became distinguished so long ago. We miss also any important communication from Dr. Shufeldt. Migh we venture to suggest that the quantity of small type used in this excellent journal is rather trying to some eyes? It unfortunately happens that even ornithologists are not exempt from some of the bodily inconveniences of advancing years, however young they may continue mentally; and at present the volume of the *Auk* is not so obese but that it might wax fatter without losing its volant powers.

Col. Yolland, C.B., F.R.S., one of the Inspectors of Railways under the Board of Trade, died on Friday last at Baddesley Vicarage, Atherstone, Warwickshire. He was born in 1810, was admitted into the Royal Military Academy, and obtained his commission in the Royal Engineers in 1828. He rose by regular promotion until he became lieutenant-colonel in 1855, and a brevet colonel in the army in 1858. After being employed in Canada till 1835, he was employed successively at the Ordnance Survey at the Tower of London, at Southampton, Dublin, and Enniskillen. During this interval he superintended the publication of astronomical observations, first those made with Ramsden's zenith sector, and afterwards with Airy's, the atter observations being for the purpose of determining the latitudes of various trigonometrical stations in Great Britain and

Ireland. He also compiled an account of the measurement of the Loch Foyle base, which was made during the years 1827–29. The article on geodesy, which forms part of the mathematical text-book used at the Royal Military College, was written by Col. Yolland. In 1854 Col. Yolland was appointed one of the Inspectors of Railways under the Board of Trade. In 1856 he was selected as the engineer member of the Commission appointed by the Secretary of State for War to consider the best mode of reorganising the system of training officers of the scientific corps, with the special intention of abolishing patronage and opening the commissions in those corps to competition. The Commissioners, the other two of whom were Col. W. J. Smith, R.A., and the Rev. W. C. Lake, visited France, Prussia, Austria, and Sardinia, and, after studying the methods of appointment in use in those countries, drew up a report, which was printed by order of the House of Commons.

Dr. Schomburgk's Report on the Progress and Condition of the Botanic Garden and Government Plantations in South Australia for the year 1884, which is dated from the Botanic Garden, Adelaide, in March last, gives, as usual, a good deal of interesting matter on the cultivation of useful plants. The co-operation, which has of late years been so much extended between the botanic gardens in all our colonial and foreign possessions, has been the means of inciting the several directors to increased energy in the development of new resources and the interchange of valuable plants, so that matter of a similar character, or treating of the same plants, often appears in reports from gardens widely separated geographically from each other. Thus we find in the report before us notes on the suitability or otherwise for Australian culture of many plants that have been similarly reported on from other parts of the world. Amongst those reported upon by Dr. Schomburgk may be mentioned mustard, rape, sesamum, ground nut, tobacco, hops, canary seed, chicory, capers, esparto, &c., &c. Speaking of esparto grass (*Macrochloa tenacissima*), which is a native of Spain, Portugal, and North Africa, and is, we are reminded, exported into England alone to the amount of 140,000 to 150,000 tons a year, so that it is becoming scarcer every day, and consequently fetching higher prices, Dr. Schomburgk says: "Considering the similarity of our climate with that of Spain, I endeavoured to introduce this valuable grass into the Colony, which, after many difficulties, I succeeded in accomplishing, and I have not been disappointed in its acclimatisation in South Australia. The grass which I have now cultivated for the last five years grows admirably with us, notwithstanding the most severe droughts we have to contend with. It is propagated by seed. The question will naturally be asked, 'Suppose we succeed in growing the grass here, where shall we find a market for it?' Our enterprising and go-ahead neighbours in Victoria have already established two paper mills, and I understand Sydney also possesses one, so that, if we succeed, the market for the grass is close at hand, and I think it would even pay to export the grass to England, as by means of hydraulic pressure the bulk would be considerably reduced." Another industry which seems to promise well in South Australia is the production of sumac, which consists of the powdered leaves and twigs of *Rhus coriaria* and *Rhus cotinus*, shrubs of the Mediterranean region, and grown largely in Southern Europe for the sake of the leaves. Dr. Schomburgk says both plants grow in the Adelaide Botanic Garden, and the climate seems to suit them; he recommends, however, that trials should be made to ascertain whether they would thrive in poor or sandy soil. On this subject the British Consul at Palermo, in the neighbourhood of which the best sumac is grown, says the soil best adapted for the plant is that of a sandy nature. It is propagated by cuttings. The bulk of the sumac is shipped from Palermo to various countries, but principally to the United States. A catalogue of plants added during 1884 to the collection under cultivation at the Botanic Garden is given in the form of an appendix.

It was hardly to be expected that the season should pass without the appearance of the sea-serpent somewhere, and if we are to believe the information forwarded to us from a correspondent in Norway, it has just visited the coast of Nordland. Three Sundays ago some lads were returning to the Island of Röd from the church at Melö, in the middle of the day, when they saw far out in the fjord a streak in the sea, which they believed to be a flock of wild ducks swimming. On proceeding further, however, they heard the whizzing as of a rushing fountain, and in a few moments perceived a great sea-monster with great velocity making straight for the boat. It appeared to be serpentine in shape, with a flat, scaly head, and the lads counted seventeen coils on the surface of the water just as it passed the stern of the boat so closely that they could have thrown a boat-hook into it. By subsequent measurements on land the length of the animal was estimated at about 200 feet. It pursued its course on the surface of the sea until close behind the boat, when it went down with a tremendous noise, but reappeared a little after, shaping its course for the Melö, where it disappeared from view. Naturally the lads were greatly frightened. The weather at the time was hot, calm, and sunny. Our informer states that the lads are intelligent and truthful, and that there is no reason to discredit their unanimous statement, made, as it were, in a terribly frightened condition. It might be added that the waters in which the animal was seen are some of the deepest on the Norwegian coast, and that it is not the first time fishermen have averred having seen the sea-serpent here. The existence of the sea-serpent is fully believed in along the coast of Norway.

We have received the *Journal* and *Proceedings* (vol. xviii.) of the Royal Society of New South Wales for 1884. Besides the President's address, it contains several papers, reports of the various meetings, an abstract of the meteorological observations at the Sydney Observatory, and a rainfall map. Amongst the papers we find one on the removal of bars from the mouths of rivers, by Mr. Shellsbear; on some New South Wales minerals, by Prof. Liversidge; on the oven-mounds of the aborigines of Victoria, by Mr. MacPherson; on a new form of actinometer, by Mr. Russell; on the water supply of the interior of New South Wales; and shorter papers on gold, on the trochoided plane, on doryanthes, &c., Mr. Caldwell's paper on the embryology of the marsupiala, monotremata, and ceratodus.

We have to acknowledge a copy of the English translation of the paper read by Messrs. Thorell and Lindström to the Royal Swedish Academy of Sciences, on the Silurian scorpion found in Gothland (Nature, vol. xxxi. p. 295). It is published by Norstedt and Sons, Stockholm.

The ceremony of the Chevreul centennial has been postponed until January 1, 1886. To give more solemnity to the celebration all the Paris students will be present at the *fête*; now most of them are in the provinces or abroad. The health of M. Chevreul continues excellent, and the delay is not likely to prove an obstacle to the ceremony.

Prof. Doolittle, of the Lehigh University, Pennsylvania, has published a treatise on practical astronomy, as applied to geodesy and navigation (New York: Wiley; London: Trübner). It is intended as a text-book for universities and technical schools, and as a manual for the field astronomer. The object has been to present in a systematic form the most approved methods in use at the present time, and these are illustrated by complete numerical examples. In the introduction the method of least squares is developed with special reference to the requirements of this particular class of work.

NEARLY all the ironworks at Pittsburgh, besides some forty iron firms within a radius of thirty miles, are now using the natural gas of the district, as are also most of the glass factories, distilleries, breweries, &c. This is creating an entire revolution in the labour market there. The output of iron and steel at Pittsburgh is about 750,000 tons per annum, and as it takes some 50 bushels of coal to make one ton of iron, it follows that at least 38,250,000 bushels of coal will be dispensed with in the yearly consumption, throwing out of employment an enormous number of miners, firemen, ashmen, roadmen, and other *employés* of the collieries. The cause of this great change being entirely one of nature's arrangement renders it an impossibility for trade unions and labour agitators to deal with the matter.

WE have received the *Report* and *Proceedings* of the Bristol Naturalists' Society for the year ending April 30 last. The principal paper is a long one, with illustrations, by Prof. Lloyd Morgan, on sub-aërial denudation and the Avon gorge, in which he has worked out in detail the subject of the influence of geological structure on the scenery of the Avon, more particularly of that section of the Avon basin lying between Bristol and the Channel. There are also papers on the mapping of the millstone grit at Long Ashton near Bristol by the same writer, on a common fin whale stranded in the Bristol Channel by Mr. Wilson, and on the newly-discovered phenomenon of apospory in ferns by Mr. Druery. There are also papers on the rainfall at Clifton in 1884, and meteorological observations with regard to temperature during the same year. Finally Mr. Bucknall prints the eighth part of his fungi of the Bristol district, and Mr. White additions to his *flora* of the Bristol coal-field. The report shows that only a portion of the papers read are printed. Perhaps it is right to add in conclusion that the society is in a flourishing financial condition, for it has not only a comfortable balance on the right side of its current accounts, but has actually a capital to the amount of 17*l.* 10*s.* invested in securities.

A REPORT from the Government Astronomer in the *Hong Kong Government Gazette* upon the progressive motion of typhoons gives the following average velocities. The course of the typhoon is here followed from its commencement on the east coast of Luzon, the cradle of the typhoons of the China seas, into the Sea of Japan, beyond which they are dissipated and lost in the North Pacific:—

	Nautical miles an hour
East of Luzon	7
China Seas between 12° and 18° N.	6
China Seas between Hong Kong, Luzon, and Southern Formosa	11
About Hainan	13
East of Formosa	10
In Southern China: Kwangtung, Fokien, and Kiangsi	10
In the Formosa Straits	12
About Shanghai	12
In Northern China	23
About Japan	19
In the Sea of Japan	30

DR. NICKERSON, of New York, has published as a pamphlet the memorial address by him on Joseph Henry and the magnetic telegraph, delivered at Princeton College. It is printed at the request of the President and members of the College, and is published by Charles Scribner and Sons, of New York.

WE have to acknowledge Mr. G. J. Symons's "British Rainfall" for 1884. The issue for 1860, in four pages, is reprinted and bound with the volume, and is interesting as the beginning of the elaborate work which Mr. Symons now publishes every year. The present volume differs from its predecessors, inasmuch as it contains no articles from observers upon experimental or other branches of rainfall work; but their place has been supplied by notes by the editor scattered throughout the book. He has invited observers to report any facts within their knowledge bearing on the effect produced upon the level of water in wells, &c., by the small rainfall of the year. Consequently observers' accounts occupy a considerable space. Mr. Symons has added a full account of the drought.

WE have received the report of the *Verein für Naturkunde* of Mannheim for the fiftieth and fifty-first years of its existence. The report contains the jubilee address, and also a lecture delivered by the late Dr. Schimper in the year 1834, on the classification and succession of organisms, together with a brief biography of the author and a bibliography of his writings.

THE additions to the Zoological Society's Gardens during the past week include a Purple-faced Monkey (*Semnopithecus leucoprymnus*) from Ceylon, presented by Mr. Ernest Greathead; a Weeper Capuchin (*Cebus capucinus* ♂) from South America, presented by Mrs. A. Sinclair; a Ring-tailed Coati (*Nasua rufa* ♂) from South America, presented by Master J. C. Robinson; a Yellow-footed Rock Kangaroo (*Petrogale xanthopus* ♀) from South Australia, presented by Mr. C. W. Holden; a Levaillant's Cynictis (*Cynictis penicellata* ♀), a Suricate (*Suricata tetradactyla* ♀) from South Africa, presented by Mr. John Constable; four Black Water Voles (*Arvicola amphibius*) from Scotland, presented by Mr. W. Arkwright, F.Z.S.; a White-backed Piping Crow (*Gymnorhina leuconota*) from South Australia, presented by Miss A. Charsley; a Poë Honey-eater (*Prosthemadera Novæ-Zealandiæ*) from New Zealand, presented by Mr. Charles Clifton, F.Z.S.; a Humboldt's Lagothrix (*Lagothrix Humboldti*) from the Upper Amazons, a Glutton (*Gulo luscus*) North European, deposited; a Jaguar (*Felis onça*) from America, deposited; two Long-fronted Gerbilles (*Gerbillus longifrons*), two Snow Birds (*Junco hyemalis*), five Common Vipers (*Vipera berus*), thirty Striped Snakes (*Tropidonotus sirtalis*) bred in the Gardens).

ASTRONOMICAL PHENOMENA FOR THE WEEK, 1885, *SEPTEMBER* 13-19

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on Sept. 13

Sun rises, 5h. 34m.; souths, 11h. 55m. 44·2s.; sets, 18h. 18m.; decl. on meridian, 3° 38′ N.: Sidereal Time at Sunset, 17h. 50m.

Moon (at First Quarter on Sept. 16) rises, 10h. 52m.; souths, 15h. 50m.; sets, 20h. 42m.; decl. on meridian, 13° 54′ S.

Planet	Rises	Souths	Sets	Decl. on meridian
	h. m.	h. m.	h. m.	° ′
Mercury ...	4 6 ...	10 56 ...	17 46 ...	9 5 N.
Venus ...	8 49 ...	14 3 ...	19 17 ...	9 52 S.
Mars ...	0 27 ...	8 30 ...	16 33 ...	21 31 N.
Jupiter ...	5 10 ...	11 45 ...	18 18 ...	5 56 N.
Saturn ...	22 53* ...	7 1 ...	15 9 ...	22 22 N.

* Indicates that the rising is that of the preceding day.

Occultations of Stars by the Moon

Sept.	Star	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image
			h. m.	h. m.	° °
19 ...	13 Capricorni ...	6 ...	20 4 ...	21 23 ...	122 272
19 ...	14 Capricorni ...	5 ...	21 33 ...	22 41 ...	151 273

The Occultations of Stars are such as are visible at Greenwich.

Sept. h.
18 ... 19 ... Mercury at greatest elongation from the Sun. 18° west.